

## Can genetically modified (GM) rice be contained? An analysis of two GM rice contamination cases.

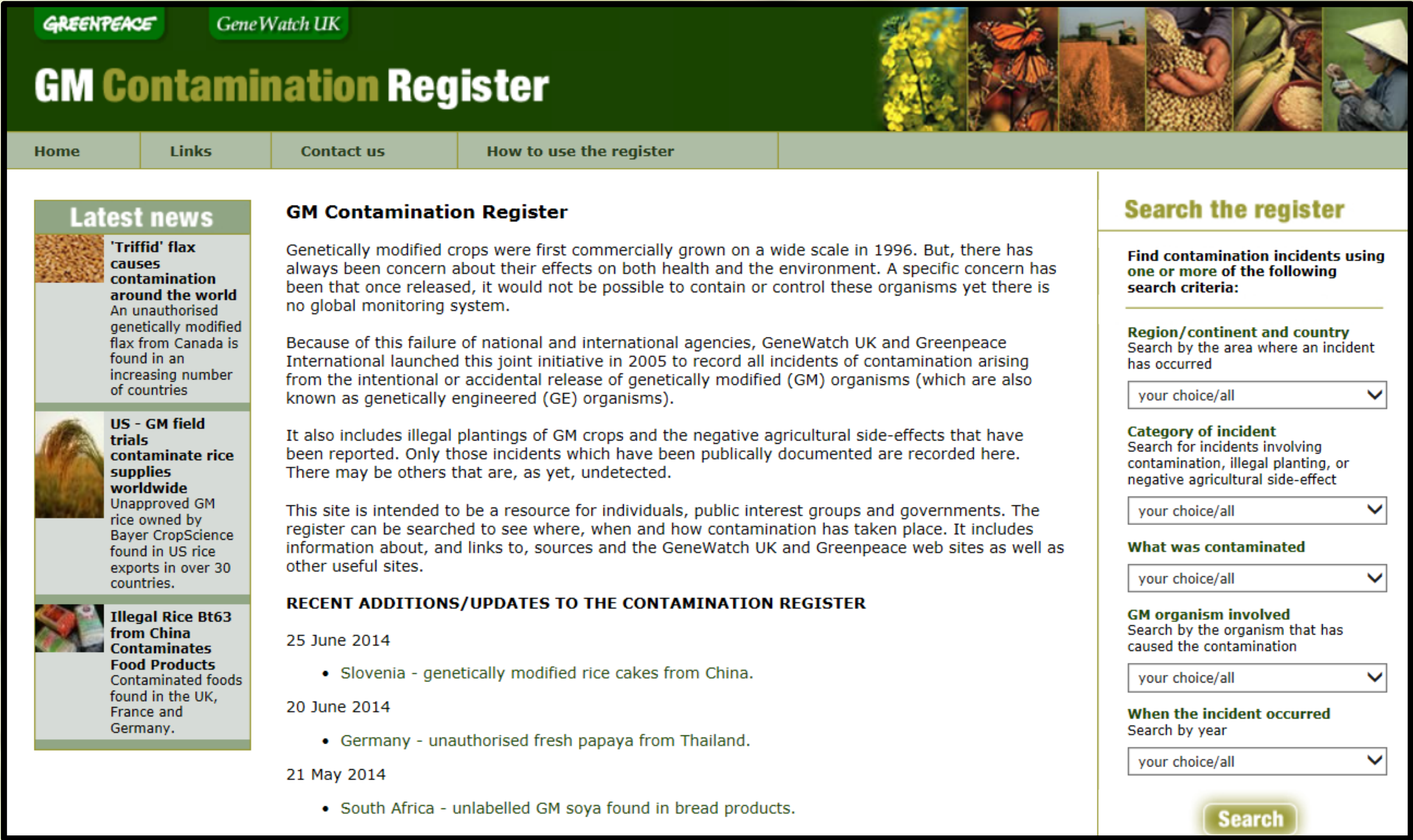
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### Contamination from GM rice

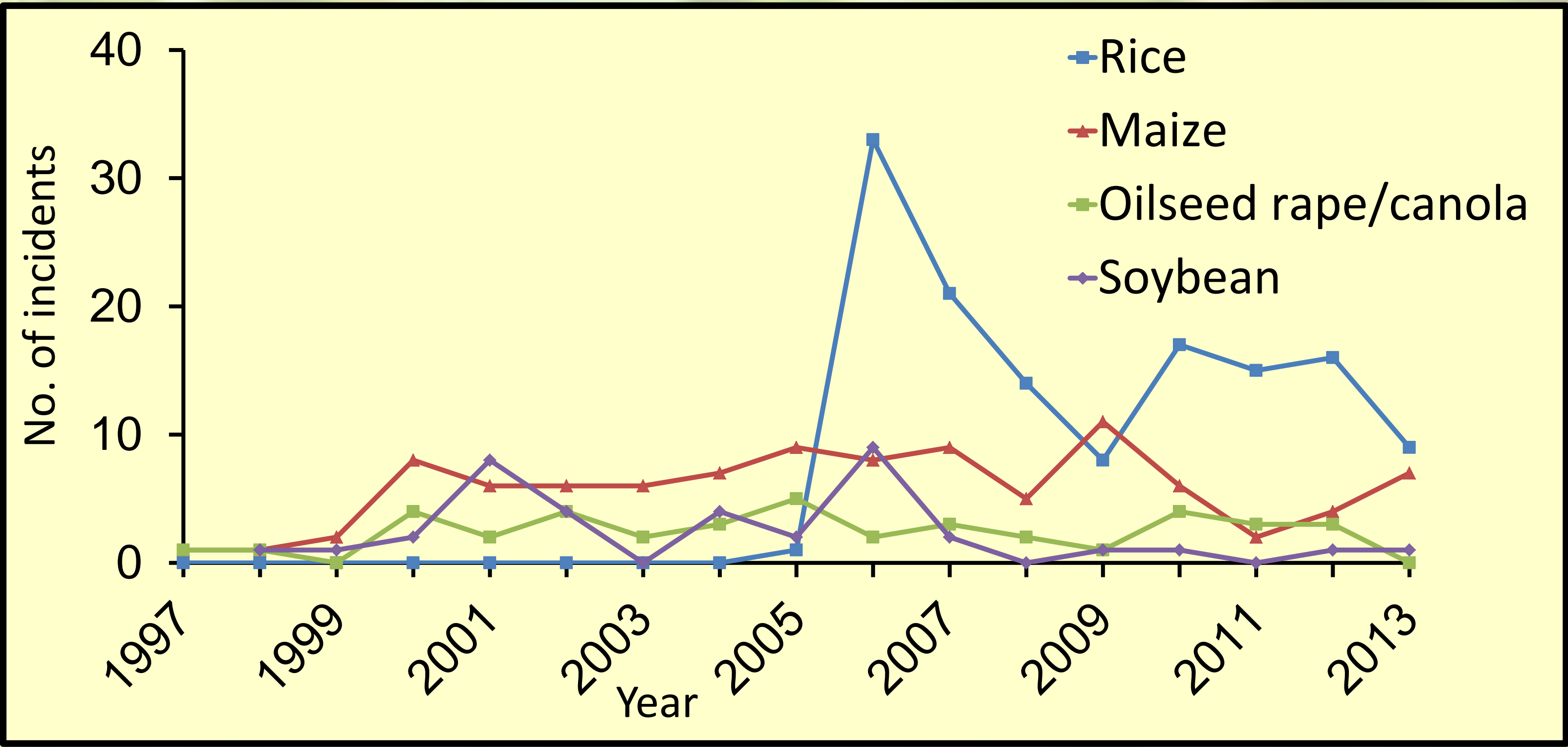
The GM Contamination Register records GM contamination incidents in a searchable database (Fig. 1). Analysis of this database has illuminated patterns of GM rice contamination.

Rice is the crop associated with the highest number of GM contamination incidents<sup>1</sup>, accounting for a third of incidents (134/396), 1997-2013 (Fig. 2). This is despite a global absence of any commercial cultivation of GM rice. The majority of these incidents derive from two cases of contamination, LLRICE (USA, 50 incidents) and Bt63 (China, 78 incidents).

Both cases caused disruption to international trade but have different histories of GM contamination rates (Fig. 3). The different histories might represent differences in the ease of halting the GM contamination and/or differing monitoring regimes.



**Fig. 1 The GM contamination register.**  
[www.gmcontaminationregister.org](http://www.gmcontaminationregister.org)

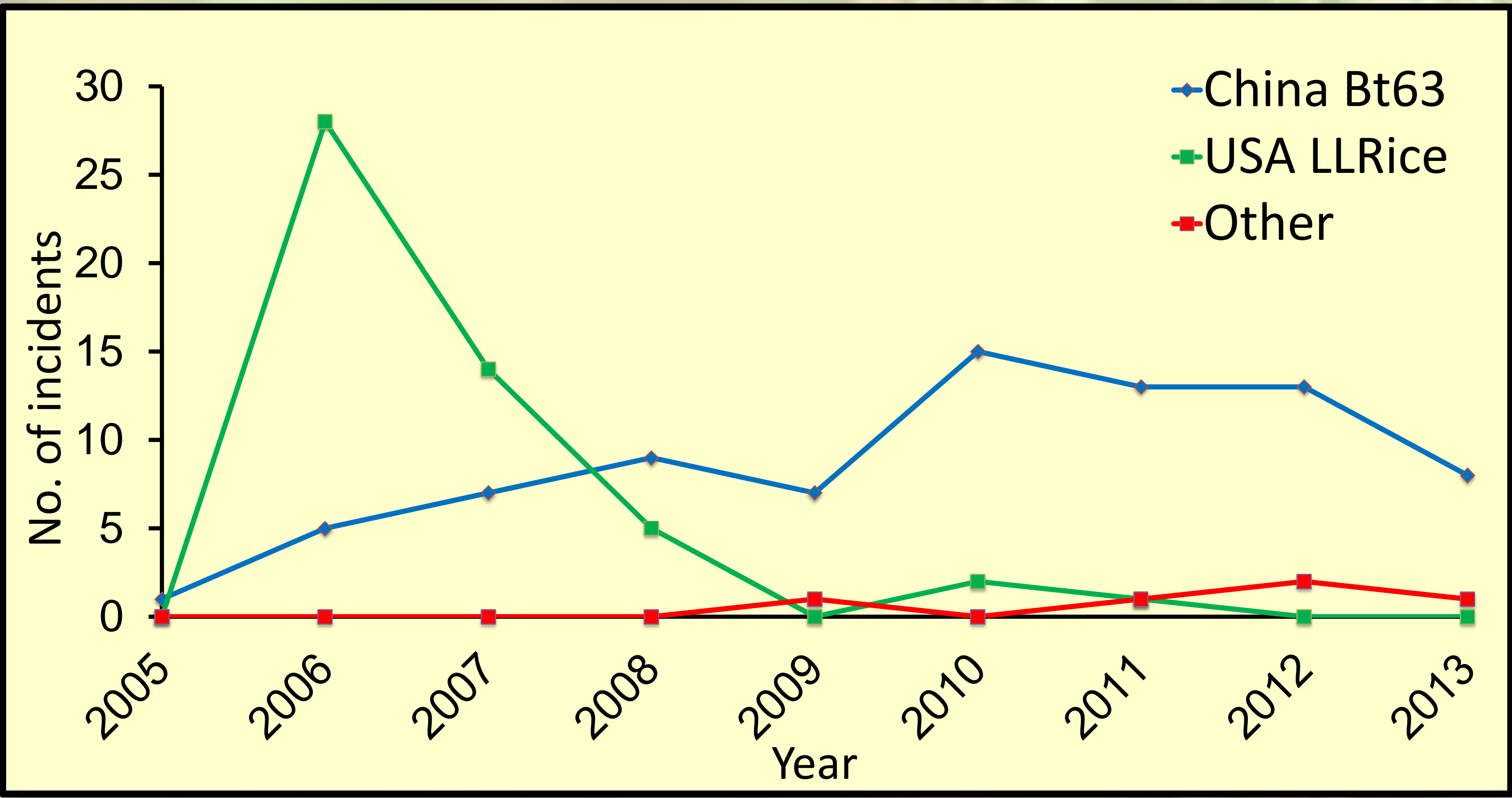


**Fig. 2 Incidents of GM contamination for rice, maize, oilseed rape (canola) and soya, 1997-2013<sup>1</sup>.**

### Marker Assisted Selection (MAS) – a better option

GM rice is evidently difficult to contain. This is a concern for farmers, traders and breeders, e.g. with GM ‘Golden’ rice<sup>2</sup>. In contrast, crops developed using MAS do not raise contamination concerns as they are conventionally bred.

This week, Greenpeace releases a new report (Fig. 4) reviewing the proliferation in use of MAS for breeding useful traits in many different crops across continents<sup>3</sup>.



**Fig. 3 Global frequency of GM rice contamination 2005-2013<sup>1</sup>.** “Other”, comprises principally basmati rice either in, or imported from, India and Pakistan.

### References

- <sup>1</sup> Price B. & Cotter J. (2014) The GM Contamination Register: a review of recorded contamination incidents associated with genetically modified organisms (GMOs), 1997-2013. Int. J Food Contam. (in press)
- <sup>2</sup> Greenpeace (2013) Golden Illusion. [www.greenpeace.org](http://www.greenpeace.org)
- <sup>3</sup> Greenpeace (2014) Smart Breeding: the Next Generation. [www.greenpeace.org/smartbreeding2014](http://www.greenpeace.org/smartbreeding2014)

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